

CLAIMS

1. A display screen comprising, along the direction of propagation of projected
5 light :

- a diffuser (8) having an elongated radiation diagram with a horizontal major
axis;

- a support (10) with a light entry surface (16) having cylindrical focusing
elements (18) substantially parallel to the major axis of the radiation diagram of the
10 diffuser, the support further having an opaque layer (20) with apertures (22) adapted
to allow the light focused by said focusing elements to pass.

2. The display screen of claim 1, characterised in that the diffuser has a
radiation diagram with a half-luminance angle less than $\pm 10\%$, or even $\pm 5\%$, in the
15 vertical direction.

3. The display screen of claim 1 or 2, characterised in that the diffuser has a
radiation diagram the elongation of which is greater than 6, preferably greater than
12.
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4. The display screen of claim 1,2 or 3, characterised in that the apertures in the
opaque layer make up at the most 30 % of the total surface, or even at the most 20%,
and preferably at the most 10 % of the total surface.

25 5. The display screen of one of Claims 1-4, characterised in that the diffuser is
a surface diffuser.

6. The display screen of claim 5, characterised in that the active surface (14) of
the diffuser (8) is directed towards said support.
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7. The display screen of claim 5, characterised in that the diffuser is a
holographic diffuser with an active surface opposite the support.

8. The display screen of one of Claims 1-7, characterised in that it further comprises a supplementary diffuser.

9. The display screen of claim 8, characterised in that the supplementary
5 diffuser is conical.

10. The display screen of claim 8 or 9, characterised in that the supplementary diffuser has a maximum scattering angle less than the vertical scattering angle of said elongated radiation diagram diffuser.

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11. The display screen of claim 8,9 or 10, characterised in that this supplementary diffuser is a surface diffuser formed on a surface of said elongated radiation diagram diffuser (8).

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12. The display screen of claim 8, characterised in that the supplementary diffuser is a surface diffuser formed adjacent to said opaque layer (20).

13. The display screen of one of Claims 1-12, characterised by a substrate (24) disposed above said opaque layer (20).

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14. The display screen of one of Claims 1-13, characterised by a Fresnel lens with its active surface directed towards said elongated radiation diagram diffuser (8).

15. The display screen of claim 14, characterised by a vertical lenticular
25 element at the entry to said Fresnel lens (6).

16. The display screen of claim 15, characterised in that the supplementary diffuser is a surface diffuser formed on the entry surface (4) of said Fresnel lens (6).

17. The screen of claim 14,15 or 16, characterised in that it has an optical
30 transmission greater than or equal to 0.70.

18. The screen of one of Claims 14 to 17, characterised by a half-luminance emission angle in a horizontal plane greater than $\pm 48^\circ$ and by an extinction angle in the horizontal plane greater than ± 72 degrees.

5 19. The display screen of one of Claims 14 to 18, characterised by a resolution on a horizontal axis greater than 10 line pairs per mm.

20. The display screen of one of Claims 14-19, characterised in that the Fresnel lens, the diffuser, the support and the substrate are assembled by peripheral bonding.

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21. The display screen of one of claims 13-20, characterised in that it has, on at least one non-scattering surface, an anti-glare layer, preferably of the moth-eye type.

22. The display screen of one of claims 13-21, characterised in that the support,
15 at the side of the opaque layer, is bonded onto the substrate.

23. The display screen of one of claims 13-22, characterised in that it has an outer frame (82) in which there are mounted said substrate (24), a first frame (72) supporting the diffuser (8) and a second frame (78) supporting the Fresnel lens (6).

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24. The display screen of claim 23, characterised in that the outer frame (82) has a reference plane (70) against which basic surfaces (S1, S2) of said substrate (24) and first frame (72) bear.

25 25 A rear projector unit comprising a projector (2) and a display screen according to one of Claims 14 to 22, the Fresnel lens being adapted to collimate the light leaving said projector.

26. The rear projector unit of claim 23, characterised by a contrast better than
30 500 under ambient illumination of 100 lux, for a luminous flux from said projector of 500 lumens.